

Greater Yellowstone Area Clean Air Partnership 2004 Meeting¹
Pinedale, Wyoming
Pinedale Public Library



October 13, 2004

BLM Pinedale District Resource Management Plan and Oil and Gas Development Overview, Jonah Infill & Winter Drilling Proposals

The BLM Field office in Pinedale is the most active BLM Field office in the US for oil and gas activity. The interest in energy development is being driven by high prices and high demand. Carol Kruse, Karen Rogers, Kellie Roadifer, and Susan Caplan, all with BLM, discussed gas development projects in SW Wyoming under agency environmental review, development activity, production activity, and potential future activity not yet under review, such as condensate pipelines. The Upper Green River Basin has 2900 existing wells in the Pinedale District Field Office area. The Pinedale office processes 200-300 APD's per year. About 425 new wells will be processed in 2005 and 475 for 2006 and 2007. Potential oil and gas development in the South Piney area is being addressed in an EIS. The Jonah Infill proposal, also being addressed in an EIS, is evaluating up to 3100 wells, with 2000-2200 likely. There may be at least 20 drilling rigs in the Jonah field at one time for 15-20 years. An EA is being prepared for year-around drilling in the Pinedale Anticline gas field. There is also gas development interest in the Bondurant area. Approximately 10.5 trillion cubic feet of gas is recoverable in the Jonah field and 20-25 10.5 trillion cubic feet in the Pinedale Anticline. The Pinedale Field

¹ A sign-up sheet of the 30 attendees is available hardcopy. It contains the name, affiliation, phone number and email address of each participant. Contact Mark Story at mstory@fs.fed.us for a copy.

Office area administers enough natural gas reserves for 2 to 3 years at present U.S. consumption. Current Upper Green River basin activity has been accelerated with the use of sand formation fracture technology to access the gas. BLM is revising the Resource Management Plan of 1988 since the RFD anticipated considerably less than present gas development activity. The oil and gas industry is working hard to be environmentally responsible in the area. Darla Potter of Wyoming DEQ provided perspective on the now outdated SWWYTAF air quality modeling efforts. Wyoming DEQ is now using CALPUFF/CALMET and has learned much since original SWWYTAF modeling. Susan Caplan mentioned an updated “State of the Atmosphere” emissions inventory for Wyoming should be available in late 2005 and should allow more refined cumulative effects modeling. Darla discussed permitting, utility of BACT and the regional haze rule.

[Air Quality Monitoring Stations, BACT and Well completion](#)

Jim Sewell, Shell Oil Company discussed operations in the Pinedale Anticline field. Drill rigs and gas processing equipment internally track CH₄, CO₂, VOC, NO_x, and SO_x. Drill rigs are the main source of NO_x while production operations are the main source of VOC/HAP. Much attention is focused on flaring operations. Jim discussed green gas well completion technology in detail which reduces or the need to flare. Shell is cooperating with the Wyoming DEQ in an air quality monitoring station in Boulder, Wyoming which will includes NO_x, Ozone, PM₁₀, meteorology, and visibility (nephelometer and a digital camera).

[Field trip to Pinedale Anticline gas field Winter Drilling Proposal](#)

Questar Inc. employees provided a tour of gas production activities in their portion of the Pinedale Anticline field. Stops included completed wells, close to completion wells, and wells being actively drilled. The field tour included a walk through an operating drilling rig and green gas well completion technology.



October 14, 2004

Green River Basin Oil & Gas Development Concerns

Linda Baker, Upper Green River Valley Coalition, shared concerns with existing and future energy development in the basin, such as visibility (haze) effects, water quality (surface and groundwater) effects, apparent lack of access to BLM monitoring data, and wildlife effects (sage grouse, mule deer, antelope). Linda supports holistic management and cumulative effects analysis, but believes the lack of available data is a major constraint.

Night-time Well Flare Monitoring with Optical Spectrometer

Perry Walker, retired U.S. Air Force physicist and owner of Photon Field Engineering, shared results of monitoring nighttime flaring in the gas fields using a fiber optic miniature spectrometer. Perry has learned that chemicals being used in fracturing are showing signature in emissions (Na, K, and Li). The combustors for tank emissions, while variable, may be better than the dehydrator emitters. He is now monitoring combustion chambers and seeing poor burning behavior indicating the chambers are not 98% efficient. The glycol re-circulators, which are unregulated, have a spikey spectrometric signature and can continuously vent to the atmosphere. Perry would like to do more quantitative monitoring using EPA approved optical based emission monitoring instruments which would allow near real time measurement of haze precursor gasses. Perry is trying several avenues to procure funding for the equipment.

Wyoming DEQ Permitting of Oil and Gas Facilities

Cynthia Madison, Wyoming DEQ discussed the oil and gas permitting process and how it has evolved over time. The emission control requirements and permitting process currently utilized under the Air Quality Division Notice of Installation/Presumptive BACT permitting process were revised in July to address the increased activity and emission levels. New requirements for the Jonah and Pinedale Anticline gas field includes single well VOC limitations of 30 TPY of VOC, 20 TPY VOC limits for flashing emissions, and 5 TPY total HAPA from dehydration units. Allowable BACT level emissions have been reduced. Additional controls have also been revised for multiple well or PAD facilities. Application procedures for single well or Multiple well or PAD facilities have also been revised. All operation specific emissions now need to be controlled upon production startup. DEQ is behind in issuing permits but not in controlling emissions.

Wyoming DEQ-AQD and Industry Air Quality Monitoring in Green River Basin

Cara Casten, Wyoming DEQ, discussed ambient air quality monitoring activities in the Basin. The network is being expanded to focus on energy development and potential impacts to public health and environment. Three new sites are scheduled for the Pinedale area. EnCana and AQD South Daniel sites will monitor NOx, ozone, PM10 TEOM, 10m

meteorology and visibility (digital camera). Shell/AQD site will have the same, plus a nephelometer. Data are or will be available at www.wyvisnet.com.

Bridger Wilderness Air Quality Monitoring Program Overview

Terry Svalberg and Ted Porwoll, Bridger-Teton National Forest shared the results of 20 years of air quality monitoring conducted on the Bridger Teton and Shoshone Forests. At the NADP sites, nitrate concentrations appear to be steady while sulfates are decreasing. At the IMPROVE particulate site, sulfates are decreasing while nitrates have increased significantly since 1997. The increase does coincide with gas development in the area but it also coincides with regional increases as well. Images are available at www.fsvisimages.com. The visibility data suggests the best view days on the Forest may be deteriorating. Lake monitoring data is being analyzed and results should be available soon. Lake monitoring includes chemistry, zooplankton, and macro-invertebrates with most of the lake sampling sites with a 20 year record. Synoptic lake sampling was conducted in the mid to late 90's which found several lakes more sensitive than the benchmark sampling lakes.

Bulk deposition data suggests nitrates and sulfates loads may be going decreasing but a key variable is the 5-6 year drought which has reduced wet deposition. Highest nitrate concentrations are June through September. Annual nitrate concentrations may be increasing while sulfates appear to be declining.

Cursory results suggest 20 years of data may not be enough and that trends across sites are similar (NO_3 up and SO_4). The rate of gas development in the Upper Green River Basin is greater than anticipated. New BLM NEPA analysis shows potential gas development impacts to Class I areas. A lack of baseline data occurs in some areas. There is a need to validate dispersion, deposition, and visibility models with monitoring data. The Gypsum Creek and South Pass NADP sites and Black Joe Lakes and Hobbs lakes bulk deposition sites had been previously funded by industry. There is a need to secure long-term funds (\$120,000/year) to continue monitoring the sites. In addition coordination efforts are needed to determine what emission levels and corresponding AQRV impacts are acceptable.

Considerable discussion was held that perhaps all stakeholders meet to discuss the existing program and long-term funding. Items to consider are program adequacy and opportunities for can it be multi-funding. Potential funding sources include the Forest Service, BLM, Wyoming DEQ, oil and gas industry, EPA, and grants. Interest groups may be an additional source of monitoring funds.

Oil and Gas Economic Tradeoffs in the Greater Yellowstone Area

Jeff Blend, Montana DEQ, discussed potential societal benefits versus societal costs associated with oil and gas development. Benefits (primary economic) may be short-term and widespread. Costs (mainly environmental) may be mostly local.

Rocky Mountain Regional Snow Chemistry Monitoring and Hayden Powerplant Emissions Effects

George Ingersoll, USGS, discussed the USGS snow chemistry monitoring program. He presented results of the 2004 snowpack monitoring, which extends from northern Montana to northern New Mexico. The 2004 monitoring is the 12th annual monitoring of 60 sites. The 2004 spring snow pack depth was very low throughout the Rocky Mountains. In general NH_4 shows a decrease. NO_3 is steady to slightly increasing while SO_4 and Hg have decreased.

George summarized the snowmobile effects of snowpack monitoring results in Yellowstone Park where snow has been sampled in the roadway and in adjacent non-roadway areas. NO_3 and NH_4 levels were lower than in previously years, probably due to use of 4-cycle snow machines and fewer numbers of snowmobiles during the winter of 2003/2004.

George also summarized the effects of reducing in power plant emissions at the Hayden Power Plant in NW Colorado. NH_4 is decreasing, but is probably not due to the power plant. NO_3 may be increasing. SO_4 and H^+ are decreasing. Ca and Mg are up significantly, possibly due to increased amounts of dust in the air due to the drought.

Wyoming Regional Haze SIP and Status of the New Wyoming DEQ Smoke Regulations and Guidance

Darla Potter, Wyoming DEQ, discussed updates made to the regional haze SIP and new regulations for smoke management. DEQ is awaiting approval of the SIP by EPA. The SIP, in future revisions, must address all anthropogenic sources, all mandatory Class I areas, all possible control options, current visibility conditions, and progress toward long term regional haze goals. Section 2 of the smoke management regulations address open burning. Section 4 addresses vegetation burning. The document will be finalized soon with follow up website posting and public education.

Update of $\text{PM}_{2.5}$ Statuses for Libby, Montana - Causes, Controls

Trista Glazier, Montana DEQ updated the group on $\text{PM}_{2.5}$ monitoring in Libby. Libby is in a very confined valley in NW Montana that has had been a PM_{10} and $\text{PM}_{2.5}$ non-attainment area for several years. It was originally believed the particulate source was a local sawmill. The source has now been confirmed as wood stoves in residences. EPA is considering a stove replacement program with Libby as a pilot.

Montana DEQ Real Time Air Quality Monitoring Web Page

Bob Habeck, Montana DEQ, shared Montana's new real time air quality web page located at www.deq.state.mt.us. Users can visit the site to learn about current air quality advisories, fire smoke conditions, etc.

Overview of Montana DEQ Regulatory Activity

Debra Wolfe, Montana DEQ, discussed current activities in the agency. Due to increasing demands on limited staff the Montana DEQ will need to prioritize workload. CBM is starting in southeast Montana, with unknown impacts at this time. Power plant permits are being appealed, which is heavily affecting DEQ's workload.

AWARD

Ronnee Sue Helzner presented Ted Porwoll an award for his efforts helping the Ashley National Forest with synoptic lake monitoring. Congratulations Ted!

GYACAP Roundtable

Mark Story led the roundtable topic discussion. He presented his conclusions from the meeting: energy development in southwest Wyoming is massive and is the number one threat to air quality in the GYA, BLM cumulative effects analysis may need to be revisited, Wyoming DEQ has a complex regulatory workload in balancing between energy development and air quality protection (CAA administration), the oil and gas industry is reducing per well emissions but there may be opportunity to do more, and AQRV related monitoring by the Bridger-Teton National Forest is providing critical information but needs to secure long term funding.

The group discussed the GYACAP charter and whether the group operations are consistent. The GYACAP was chartered as an advisory group to the GYCC and has provided an opportunity for air quality information sharing and program coordination between the Forest Service, Park Service, Montana DEQ, Wyoming DEQ, Idaho DEQ, USGS, and INEEL. To effectively deal with the oil and gas/air quality issue in SW Wyoming would require a much more intense focus by the GYACAP. Concerned was expressed about compliance with FACA when industry and special interest groups attend the meetings. It was suggested the group may want to present an update to GYCC and ask for advice on how to proceed with addressing GYACAP air quality concerns.

Mark suggested the current GYA air quality assessment be updated to include an overview for GYCC members of the 4 primarily GYA air quality issues including oil/gas in southwest Wyoming, smoke management (prescribed fire and wildfires), urban/industrial emissions, and snowmobile emissions. The update should be no more than 20 pages. He proposed it be completed by April 1, 2005 with a summary

presentation to the GYCC. It would also be timely if Terry Svalburg and or Ted Porwoll summarized the oil/gas development issue in SW Wyoming and existing and potential impacts to GYA Class 1 areas at the GYCC meeting.

Discussion was held about future funding of NADP and bulk deposition monitoring. Mary Maj, GYCC coordinator and Jane Darnell, Wyoming Capital City coordinator, may be able to assist. About \$120,000 per year in monitoring funding is needed to continue critical deposition monitoring at the Gypsum Creek and South Pass NADP sites and Black Joe Lakes and Hobbs lakes bulk deposition sites which have been previously funded by industry.

Discussion was held about cumulative air quality effects of the Upper Green River Basin oil and gas development. A concern is that the present analysis may be weak relative to cumulative effects of current activity and development scenarios. Susan Caplan, BLM, mentioned the "State of the Atmosphere" report is being prepared which will be an intensive inventory of Wyoming emissions which will allow more detailed modeling to address cumulative effects concerns. Since Wyoming DEQ has air quality primacy they are the key regulatory agency in addressing this issue. A joint BLM/DEQ assessment of cumulative effects which will be needed for future BLM oil/gas energy NEPA analysis and ROD's. Mark suggested the Forest Service needs to do a critical load analysis for deposition and visibility in the Bridger Wilderness since critical load thresholds are an integral part of the AQRV protection.

It was suggested BLM be added to the GYACAP group, which was confirmed with Susan Caplan and Carol Kruse added to the GYACAP mailing list.

The next GYACAP meeting is scheduled for October 5 and 6, 2005, with a focus on Yellowstone NP issues, snowmobile emissions, urban/industrial issues and Yellowstone National Park issues. Location will be in the Park (Mammoth, Lake, or Old Faithful) or perhaps in Cody, Wyoming. Tentative meeting coordinators are Mary Hektner and Mark Story.

The 2006 GYACAP meeting tentatively will be on the Gallatin Forest with a focus on smoke management, hazardous fuels reduction, and regional haze. Tentative 2006 meeting coordinators are Mark Story and Bob Habeck (Montana DEQ).